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Title Page

Successful lung transplantation in COVID-19 PCR positive patients: A single-center experience.

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Authorship: Y.N. designed the study. All the authors participated in the generation of the data and interpretation of results. Y.N. wrote the first version of the article. All the authors approved the final version of the manuscript.

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Abbreviation page:

COVID-19: Coronavirus disease 2019

SARS-CoV-2: severe acute respiratory syndrome coronavirus 2

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Lung transplantation is the last resort for patients with end-stage lung disease, and deciding to delay a transplant in such instances is associated with significant risks. However, a severe systemic infection may necessitate postponing this lifesaving procedure to minimize peri-operative risk.

Coronavirus disease 2019 (COVID-19) has significantly affected the transplant community, causing a decline in organ transplantation early on, and high mortality after infection[1,2]. Transplant centers conduct universal screening for COVID-19 when lung transplant candidates are hospitalized, for not only infection control but also clinical care purposes. With community prevalence, pre-lung transplant recipients incidentally show PCR positivity at the time of screening. Due to the varying presentations of COVID-19, it is challenging to distinguish if this PCR positivity reflects acute infection, chronic shedding, or a false positive result, as lung transplant candidates usually have respiratory symptoms due to their primary disease[3], which can mimic COVID-19.

Thus, we need to decide whether to proceed with a lifesaving lung transplant for SARS-CoV-2 PCR positive lung transplant candidates, especially when we cannot identify the onset of infection. Here we

report two successful lung transplants performed in recipients with PCR positivity at the time of transplantation, without being able to identify the timing of onset.

Clinical characteristics are summarized in the table. The first recipient was a 58-year-old gentleman with idiopathic fibrosis. He completed three doses of mRNA vaccines against COVID-19 five months prior to the transplant. He did not have any new respiratory symptoms or fever, but screening nasopharyngeal COVID-19 PCR was positive with a cycle threshold of 39.2 (Cepheid). Repeat testing was also positive with cycle threshold of 41.0. A double lung transplant was performed, and no anti-SARS-CoV-2 specific treatment was given. Routine bronchoscopy was performed three days after the transplant, and COVID-19 PCR became negative. The patient did not develop any postoperative complications.

The second recipient was a 65-year-old gentleman with idiopathic pulmonary fibrosis. He also completed three doses of the mRNA vaccine six months prior to the transplant. No worsening respiratory symptoms were observed, but screening COVID-19 PCR was positive, with a cycle threshold of 30.2. Repeated PCR was positive, but we proceeded with a double lung transplant. Of note, this recipient did not receive either anti-COVID-19-specific treatment peri-operatively or reduced induction immunosuppression. Both recipients had favorable graft function at 3 months post lung transplant. Of note, neither recipient received anti-thymocyte globulin as induction immunosuppression.

Double lung transplantation may be safely performed in patients with incidental COVID-19 PCR positivity. Even though there is concern about infecting the graft lung as SARS-CoV-2 might be colonizing the upper airway, our two recipients did not have bronchoalveolar lavage PCR positivity post-transplant. A multi-disciplinary team should assess such cases to minimize risk and proceed with transplantation promptly. As it is crucial to have the PCR result in a short time; our center has a short turnaround of 1 hour for PCR results. A more extensive study should be performed to identify the ideal timing from COVID-19 PCR positivity to lung transplantation.

Table 1. Characteristics of two recipients with PCR positivity at the time of lung transplantation.

	Age	***Gender***	***Primary disease***	***PCR modality***	***Transplant type***	***Induction IS***	***Repeated PCR (days)***	***One month Graft outcome***
1	58	Male	Idiopathic pulmonary fibrosis	Cepheid, Ct value 39.2	Double lung transplant	Basilliximab, Pulse dose steroid	3 days, negative	Requiring 2l/min oxygen, no rejection
2	65	Male	Idiopathic	Cepheid,	Double lung	Basilliximab,	2 days,	Room air,

	pulmonary fibrosis	Ct value 30.9	transplant	Pulse dose steroid	negative	no rejection

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